CW#17: Transversal Application

Geometry

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TP: \_\_\_\_\_\_\_

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| **CRS** | PPF 501 Use several angle properties to find an unknown angle measure |
| **Objective** | 2.9 Find the measure of a missing angle using complementary, supplementary, vertical, and parallel lines cut by a transversal angle properties |

**Review of Parallel Lines Cut by a Transversal**

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| 1. Identify the relationship between the two angles. | 2. Identify the relationship between the two angles. | | 3. Identify the relationship between the two angles. |
| 4. Find the value of x. | | 5. Find the value of x. | |
| Example 1:  In the figure below, line segments *a*  and *b* are parallel and they are intersected by line segment *c*. What is the relationship between 4 and 5?     1. *m*4 = *m*5 2. *m*4 *m*5 3. *m*4 + *m*5 = 90 4. *m*4 + *m*5 = 180 5. Cannot be determined from the given information | | You Try!  In the figure below, lines l and m are parallel. Which of the following angles does not have a measure of 75?   1. 1 2. 2 3. 3 4. 4 5. 5   5  1  2  4  3  *l*  105o  *m*  75o | |
| Example 2:  If 1 5, then which pairs of lines, if any, must be parallel?     1. *a b* only 2. *m n* only 3. *a b* and *m n* 4. No lines must be parallel 5. Cannot be determined from the given information | | You Try!  2. If 7 5, then which pairs of lines, if any, must be parallel?     1. *a b* only 2. *m n* only 3. *a b* and *m n* 4. No lines must be parallel 5. Cannot be determined from the given information | |

**Directions:** Solve for the missing angle and indicate the relationship between angles (complementary, supplementary, vertical, consecutive interior, corresponding, alternate interior, alternate exterior).

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| 1.    Angle relationship: | 2.    Angle relationship: | 3.    Angle relationship: |
| 4.    Angle relationship: | 5.    Angle relationship: | 6.    Angle relationship: |
| 7.    Angle relationship: | 8.    Angle relationship: | 9.    Angle relationship: |

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| Example 3:  In the figure below, lines *a* and *b* are parallel, and 9 = 130. Find 1. | You Try!  1. In the figure below, lines *p* and *q* are parallel, and 5 = 55. Find 8. |
| You Try!  2. In the figure below lines *a* and *b* are parallel, and 2 = 145. Find the measure of 11.     1. 35 2. 55 3. 145 4. Cannot be concluded from given information | You Try!  3. In the figure below, lines *l* and *m* are parallel. Find the indicated angle.  40  ?  *l*  120 o o  *m* |
| You Try!  4. In the figure below, 10 = 110. Find the measure of 3.     1. 10 2. 80 3. 110 4. Cannot be concluded from given information | You Try!  5. In the figure below, 1 3, and 7 = 140. Find the measure of 2. |

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| Example 4:  In the figure below, segments *MA* and *HT* are parallel. HMA, MAT, ATH, and THM are all right angles. If 5 = 65, what is the 4?  2  5  6  3  7  4  1  H  T  M  A | You Try!  In the figure below, segments *MA* and *HT* are parallel. HMA, MAT, ATH, and THM are all right angles. If 2 = 70 and 6 = 90 what is the 5?  2  5  6  3  7  4  1  H  T  M  A |
| You Try!  2. In the figure below, *AD*  *BD* and *DC AB*. If *m*D is 155, what is *m*B?  *A*  *D*  *C*  *B* | You Try!  1. In the figure below, *AD*  *BD* and *DC AB*. If *m*D is 160, what is *m*C?  *A*  *D*  *C*  *B* |

Challenge

The sum of the interior angles of any triangle is \_\_\_\_\_\_\_\_\_\_\_. You can also use that knowledge to solve for missing angles.

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| 1. Find the measure of the indicated angle. | 2. Find the measure of the indicated angle. |
| 3. Find the measure of the indicated angle. | 4. In the figure below, segments *BC* and *AD* are parallel, and BHG and CEF are right angles. If GBC = 50, what is the measure of HBG? |